REMARKS

Claims 1-22 are pending in the present application.

The present invention provides, in part, a bending apparatus for bending at least one glass sheet placed on a bending mold into a desired shape by heating in a furnace, which comprises a bending mold for placing at least one glass sheet thereon, a tunnel-like heating furnace through which the bending mold is conveyed, a first group of a plurality of heating elements fixed on an inner wall of the heating furnace, and a radiation-heating device having a second group of a plurality of heating elements placed separably from the inner wall surface of the heating furnace,

wherein said second group of a plurality of heating elements of said radiation-heating device are mounted on a structure that may be moved to increase or decrease the distance between said second group of a plurality of heating elements and said glass sheet, and

wherein the temperature of each heating element of said second group of a plurality of heating elements may be individually controlled (Claim 1).

Applicants submit that Bennett et al, GB 836,560 (GB '560), Saito et al and Kamata, individually or in any combination of the same, do not affect the patentability of the same for the following reasons.

The rejections of (a) Claims 1-2, 4 and 12 under 35 U.S.C. §102(b) over Bennett et al, (b) Claims 1-4, 11-12, and 17 under 35 U.S.C. §102(b) over GB '560, and (c) Claims 1-3 and 11 under 35 U.S.C. §102(b) over Saito et al, are respectfully traversed.

Applicants note that Bennett et al, GB '560, and Saito et al fail to disclose or suggest (a) a movable structure upon which said second group of a *plurality* of heating elements are

mounted and (b) the ability to individually control the temperature of the heating elements mounted thereon.

In order for a reference to anticipate an invention, the reference "must teach every element of the claim" (MPEP §2131). Accordingly, Bennett et al, GB '560, and Saito et al do not anticipate the invention as presently claimed. Not only do Bennett et al, GB '560, and Saito et al fail to meet the standard for determining anticipation as defined in MPEP §2131, this reference can not even support a *prima facie* case of obviousness. MPEP §2142 states: "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation... to modify the reference... Second, there must be a reasonable expectation of success. Finally, the prior art reference... must teach or suggest all the claim limitations."

With the recent diversification in automobile design, the automobile industry is requiring an increasing number of varieties of glass sheets, in particular laminated glass for windshields. The standard in the art is to bend glass sheets by using its own weight. Thus, to achieve the complicated shapes currently in demand precise control of the temperature distribution over the surface of the glass sheet has become increasingly important.

Bennett et al and GB '560 represent the current state of the art in that a local heater is used to selectively bend portions of the glass sheet that are difficult to bend by conventional heating techniques. However, this limited local heating technique only provides for a limited scope of achievable shapes.

The present invention solves theses problems. In contrast to the disclosures of Bennett et al and GB '560, the present invention utilizes a plurality of heating elements (denoted ① to ⑨ in the figures of the present application) mounted on a movable structure (i.e., the rack designated 7 in the figures of the present application). In this manner, the

temperature distribution of the glass sheet may be controlled by increasing or decreasing the distance between the heat source and the glass sheet (see Figures 6 and 8 of the present application).

Moreover, in the present invention a large number of heating elements are mounted on the movable structure (e.g., the glass sheet-exposed surface of the rack as shown in Figures 2, 3, and 4 of the present application) each of which may be individually controlled. Accordingly, the apparatus of the present invention offers a second means by which the temperature distribution of the glass sheet may be controlled in addition to the distance between heat source and object: precise and individual control of the calorific power of each heating element.

By combining the two aforementioned means to control the temperature distribution of the glass sheet, the present apparatus eliminates the need to provide individual elevating devices (inclusive of control elements, such as a drive motor and control computer) for each heating element. Moreover, by mounting a large number of heating elements on a movable structure, the plurality of heating elements can be rapidly moved toward or away from the glass sheet in a single motion. Thus, by eliminating the individual elevating devices, the inventive apparatus provides a significant cost savings (initial construction, preventative maintenance, and repair) over existing technologies as represented by Bennett et al and GB '560.

As stated above, Bennett et al and GB '560 relate to locally heating a glass sheet with the objective of bending local regions that are difficult to bend absent supplemental heating. However, at no point do these references disclose or suggest employing a plurality of heating elements to control the temperature distribution as the presently claimed invention provides. The absence of a disclosure of a movable structure upon which a plurality of heating elements

is mounted and the ability to individually control the temperature of the heating elements mounted thereon, as well as the aforementioned advantages flowing therefrom, would make these references fail the test for obviousness as set forth in MPEP §2142 and certainly would make these references fail to anticipate the claimed invention.

Saito et al merely disclose that a gap may be provided between a heating element and a wall of a furnace to prevent heat produced by the heating element from escape through the furnace wall. As in the case of Bennett et al and GB '560 above, Saito et al fail to disclose or suggest a movable structure upon which a plurality of heating elements is mounted and the ability to individually control the temperature of the heating elements mounted thereon. In the absence of any disclosure of these limitations and the advantages flowing therefrom, Saito et al fail to anticipate or render obvious the present invention.

In view of the foregoing, Applicants request withdrawal of these grounds of rejection.

The rejection of Claims 5, 13, 18, and 21 under 35 U.S.C. §103(a) over Saito et al in view of Kamata is traversed. Applicants submit that Kamata fails to compensate for the aforementioned deficiencies in the disclosure of Saito et al.

As stated above, Saito et al fail to anticipate and/or render obvious independent Claim 1. Notably, Saito et al fail to disclose or suggest a movable structure upon which a plurality of heating elements is mounted and the ability to individually control the temperature of the heating elements mounted thereon. Kamata does not compensate for this deficiency, as this reference is also silent with respect to a movable structure upon which said second group of a plurality of heating elements is mounted and the ability to individually control the temperature of the heating elements mounted thereon.

Therefore, the claimed invention is not obvious in view of the combined disclosures of Saito et al and Kamata. Withdrawal of this ground of rejection is requested.

Accordingly, Applicants submit that the present application is now in condition for allowance. Early notification of such action is earnestly solicited.

Respectfully submitted,

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